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EXAMINER

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ART UNIT PAPER NUMBER

2616

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Please find below and/or attached an Office communication concerning this application or proceeding.

**Office Action Summary**

Application No.

09/618,731

Applicant(s)

HEO, JUNG-KWON

Examiner

Christopher O. Onuaku

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --  
**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 04 March 2005.  
2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.  
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-43 is/are pending in the application.  
4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.  
5) ☒ Claim(s) 16,29 and 33-35 is/are allowed.  
6) ☒ Claim(s) 1-15,17-28,30-32&36-39 is/are rejected.  
7) ☒ Claim(s) 40-43 is/are objected to.  
8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.  
10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).  
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).  
a) ☒ All b) ☐ Some \* c) ☐ None of:  
1. ☒ Certified copies of the priority documents have been received.  
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.  
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).  
\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- 1) ☐ Notice of References Cited (PTO-892)  
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)  
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.  
4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.  
5) ☐ Notice of Informal Patent Application (PTO-152)  
6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Response to Arguments***

1. Applicant's arguments filed 3/4/05, with reference to claims 1-14,15,17-28,30,31,32&36-39 have been fully considered but they are not persuasive.

With reference to claims 1-14,17-28,30,31&36-39, applicant argues that while Kawamura et al disclose a video encoder 5 encoding video data for use in a portion of storage medium 19 designated as storing digital video disc (DVD) video, there is no suggestion that the audio encoder encodes data using a DVD audio format instead of or in addition to the ATRAC, MPEG1 Audio, MPEG2 Audio, or MD audio standards as set forth in col.9, lines 1-8, or that the audio encoder 6 is capable of performing such an operation.

In response, Kawamura discloses in col.20, lines 21-29 that the Kawamura recording medium may be utilized as DVD on which compressed digital images, compressed digital speech (audio) and so on are recorded in a multiplex manner. Further, the data reproducing method and apparatus of Kawamura may be utilized to reproduce data from DVD on which compressed digital images, compressed digital speech (audio) and so on are recorded in a multiplex manner. Therefore, since Kawamura can process both video and audio recorded on and reproduced from the DVD, inherently Kawamura audio encoder (for example, audio encoder 6 of Fig.1)

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encodes the audio data in a DVD format, in order to maintain the efficiency of the Kawamura system.

Again, applicant argues, with respect to claims 15&32, that there is no suggestion that the data is organized using video and audio directories, or that the audio data is recorded in the audio directory instead of or in addition to the video directory.

In response, in col.19, lines 36-40, Kawamura discloses wherein the TOC area may be treated as a virtual directory in the file system, and audio/video data may be treated as files existing in the directory such that the audio/video data can be read from and written into a computer system.

### ***Double Patenting***

2. The nonstatutory double patenting rejection is based on a judicially created doctrine grounded in public policy (a policy reflected in the statute) so as to prevent the unjustified or improper timewise extension of the "right to exclude" granted by a patent and to prevent possible harassment by multiple assignees. See *In re Goodman*, 11 F.3d 1046, 29 USPQ2d 2010 (Fed. Cir. 1993); *In re Longi*, 759 F.2d 887, 225 USPQ 645 (Fed. Cir. 1985); *In re Van Ornum*, 686 F.2d 937, 214 USPQ 761 (CCPA 1982); *In re Vogel*, 422 F.2d 438, 164 USPQ 619 (CCPA 1970); and, *In re Thorington*, 418 F.2d 528, 163 USPQ 644 (CCPA 1969).

A timely filed terminal disclaimer in compliance with 37 CFR 1.321© may be used to overcome an actual or provisional rejection based on a nonstatutory double patenting ground provided the conflicting application or patent is shown to be commonly owned with this application. See 37 CFR 1.130(b).

Effective January 1, 1994, a registered attorney or agent of record may sign a terminal disclaimer. A terminal disclaimer signed by the assignee must fully comply with 37 CFR 3.73(b).

3. Claim 1 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,449,227 in view of Kawamura et al (US 6,075,920)

Regarding claim 1, claim 1 of the U.S. Patent No. 6,449,227 cite the features of claim 1 of this application including DVD-Audio, audio manager (AMG) having information on audio titles each having audio title set information (ATSI) followed by contiguous audio objects (AOBs), directory of audio title set, and recording (storing) of data on DVD (see lines 2-22).

Claim 1 fails to cite the claimed features of claim 1 of this application such as an encoder to encode the data as effective data of a DVD-Audio. Kawamura et al teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format (see col.7, lines 33-58), comprising audio encoder 6 and video encoder 5 which encodes audio and video data as effective DVD-Audio (Fig.1, col.8, line 57 to col.9, line 9), here the Kawamura device functions as DVD-Audio and DVD-Video since both video and audio can be processed in the DVD format. It would have been obvious to add an encoder limitation to claim 1 in order to facilitate encoding data wherein the data conforms, at least, to the DVD-Audio format.

4. Claim 2 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 2 of U.S. Patent No. 6,449,227 in view of Kawamura et al (US 6,075,920)

Regarding claim 2, claim 2 of the U.S. Patent No. 6,449,227 cite the features of claim 2 of this application including wherein audio streams are linear PCM audio streams (see lines 1-3).

Claim 2 fails to recite the claimed features of claim 2 of this application such as an encoder storing data on the DVD in a plurality of audio streams. Kawamura et al teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format (see col.7, lines 33-58), comprising audio encoder 6 and data recording medium 19, video encoder 5 which encodes audio and video data as effective DVD-Audio; col.9, lines 1-23 and col.10, lines 5-11). It would have obvious to add to claim 2 encoding means to encode data, and recording means to record processed data.

5. Claim 3 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 23 of U.S. Patent No. 6,449,227 in view of Kawamura et al (US 6,075,920)

Regarding claim 3, claim 23 of the U.S. Patent No. 6,449,227 cite the features of claim 3 of this application including DVD-Audio, VIDEO-TS and AUDIO-TS directories positioned at the data zones, wherein AUDIO-TS includes information on an audio

manager (AMG), wherein the data zone includes the audio titles each having information on audio titles each having audio title set information (ATSI) followed by contiguous audio objects (AOBs), the ATSI includes audio stream attributes having an audio coding mode, first, second and third quantization bit corresponding to the audio data, a first, second, third, fourth, fifth and sixth sampling frequency corresponding to the data, and decoding algorithm information related to audio channel number of the audio, and wherein the AOBs includes a plurality of audio packs having the audio data corresponding to the decoding algorithm stored on the audio stream attributes (see lines 1-21).

Claim 23 fails to cite the claimed features of claim 3 of this application such as encoding unit to generate data to be reproduced and information on the data to be reproduced. Kawamura et al teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format (see col.7, lines 33-58), comprising audio encoder 6 and video encoder 5 which encodes audio and video data as effective DVD-Audio (Fig.1, col.8, line 57 to col.9, line 9), here the Kawamura device functions as DVD-Audio and DVD-Video since both video and audio can be processed in the DVD format; and reproducing apparatus (Fig.2; col.11, line 64 to col.13, line 67). It would have been obvious to add an encoder and reproducing means limitation to claim 23 in order to facilitate encoding and reproduction of data, wherein the data conforms, at least, to the DVD-Audio format.

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6. Claim 4 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 24 of U.S. Patent No. 6,449,227.

Regarding claim 4, claim 24 of the U.S. Patent No. 6,449,227 cite the features of claim 4 of this application including wherein if the audio coding mode is linear pulse modulated (PCM) audio, a maximum number of audio channels is determined by the following equation:

$$N = Mby / (Fs * Qb),$$

where  $Fs$  is the sampling frequency (Hz),  $Qb$  is the quantization bit number,  $Mby$  is the maximum data transfer rate (Mbps) of the DVD-Audio disk, and  $N$  is the maximum number of the audio channels determined by the data transfer rate, sampling frequency and quantization bit number of the DVD-Audio disk.

7. Claim 5 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 25 of U.S. Patent No. 6,449,227.

Regarding claim 5, claim 25 of the U.S. Patent No. 6,449,227 cite the features of claim 5 of this application including wherein if the audio coding mode is a compression coding system, a maximum number of audio channels is determined by the following equation:

$$N = (Mby * Ccy) / (Fs * Qb),$$

where  $Fs$  is the sampling frequency (Hz),  $Qb$  is the quantization bit number,  $Mby$  is the maximum data transfer rate (Mbps) of the DVD-Audio disk,  $Ccy$  is a compression ratio according to a DTS compression coding system and  $N$  is the maximum number of the



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audio channels determined by the data transfer rate, sampling frequency and quantization bit number of the DVD-Audio disk.

8. Claim 6 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 24 of U.S. Patent No. 6,449,227.

Regarding claim 6, claim 24 of the U.S. Patent No. 6,449,227 cite the features of claim 6 of this application including wherein if the audio coding mode is linear pulse modulated (PCM) audio, the first to third quantization bit numbers are respectively 16 bits, 20 bits, and 24 bits, the first to third sampling frequencies are respectively 44.1 KHz, 88.2KHz, and 176 KHz, a maximum number of audio channels is determined by the following equation:

$$N = Mbr / (Fs * Qb),$$

where  $F_s$  is the sampling frequency (Hz),  $Q_b$  is the quantization bit number,  $Mbr$  is the maximum data transfer rate (Mbps) of the DVD-Audio disk, and  $N$  is the maximum number of the audio channels determined by the data transfer rate, sampling frequency and quantization bit number of the DVD-Audio disk.

9. Claim 7 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 25 of U.S. Patent No. 6,449,227.

Regarding claim 7, claim 25 of the U.S. Patent No. 6,449,227 cite the features of claim 7 of this application including wherein if the audio coding mode is a compression

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coding system, a maximum number of audio channels is determined by the following equation:

$$N = (Mbr * Ccr) / (Fs * Qb),$$

where  $F_s$  is the sampling frequency (Hz),  $Q_b$  is the quantization bit number,  $Mbr$  is the maximum data transfer rate (Mbps) of the DVD-Audio disk,  $Ccr$  is a compression ratio according to a DTS compression coding system and  $N$  is the maximum number of the audio channels determined by the data transfer rate, sampling frequency and quantization bit number of the DVD-Audio disk.

10. Claim 8 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 2 of U.S. Patent No. 6,449,227 in view of Kawamura et al (US 6,075,920)

Regarding claim 8, claim 2 of the U.S. Patent No. 6,449,227 cite the features of claim 8 of this application including wherein audio streams are linear PCM audio streams (see lines 1-3).

Claim 2 fails to recite the claimed features of claim 8 of this application such as an encoder storing data on the DVD in a plurality of audio streams. Kawamura et al teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format (see col.7, lines 33-58), comprising audio encoder 6 and data recording medium 19, video encoder 5 which encodes audio and video data as effective DVD-Audio; col.9, lines 1-23 and

col.10, lines 5-11). It would have obvious to add to claim 2 encoding means to encode data, and recording means to record processed data.

11. Claim 9 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,449,227 in view of Kawamura et al (US 6,075,920)

Regarding claim 9, claim 1 of the U.S. Patent No. 6,449,227 cite the features of claim 9 of this application including DVD-Audio, audio manager (AMG) having information on audio titles each having audio title set information (ATSI) followed by contiguous audio objects (AOBs), directory of audio title set, and recording (storing) of data on DVD (see lines 2-22).

Claim 1 fails to cite the claimed features of claim 9 of this application such as DVD-video and encoder to encode the data as effective data of a DVD-Audio. Kawamura et al teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format (see col.7, lines 33-58), comprising audio encoder 6 and video encoder 5 which encodes audio and video data as effective DVD-Audio (Fig.1, col.8, line 57 to col.9, line 9), here the Kawamura device functions as DVD-Audio and DVD-Video since both video and audio can be processed in the DVD format. It would have been obvious to add DVD-video disk and an encoder limitation to claim 9 in order to facilitate encoding data wherein the data conforms to the DVD-Audio disk and DVD-Video disk format.

12. Claim 10 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 2 of U.S. Patent No. 6,449,227 in view of Kawamura et al (US 6,075,920)

Regarding claim 10, claim 2 of the U.S. Patent No. 6,449,227 cite the features of claim 10 of this application including wherein audio streams are linear PCM audio streams (see lines 1-3).

Claim 2 fails to recite the claimed features of claim 10 of this application such as an encoder storing data on the DVD in a plurality of audio streams. Kawamura et al teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format (see col.7, lines 33-58), comprising audio encoder 6 and data recording medium 19, video encoder 5 which encodes audio and video data as effective DVD-Audio; col.9, lines 1-23 and col.10, lines 5-11). It would have obvious to add to claim 2 encoding means to encode data, and recording means to record processed data.

13. Claim 11 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 7 of U.S. Patent No. 6,449,227.

Regarding claim 11, claim 7 of the U.S. Patent No. 6,449,227 cite the features of claim 11 of this application including wherein if the audio coding mode is linear pulse

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modulated (PCM) audio, a maximum number of audio channels is determined by the following equation:

$$N = M_{by} / (F_s * Q_b),$$

where  $F_s$  is the sampling frequency (Hz),  $Q_b$  is the quantization bit number,  $M_{by}$  is the maximum data transfer rate (Mbps) of the DVD-Audio disk, and  $N$  is the maximum number of the audio channels determined by the data transfer rate, sampling frequency and quantization bit number of the DVD-Audio disk.

14. Claim 12 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 8 of U.S. Patent No. 6,449,227.

Regarding claim 12, claim 8 of the U.S. Patent No. 6,449,227 cite the features of claim 12 of this application including wherein if the audio coding mode is a compression coding system, a maximum number of audio channels is determined by the following equation:

$$N = (M_{by} * C_{cy}) / (F_s * Q_b),$$

where  $F_s$  is the sampling frequency (Hz),  $Q_b$  is the quantization bit number,  $M_{by}$  is the maximum data transfer rate (Mbps) of the DVD-Audio disk,  $C_{cy}$  is a compression ratio according to a DTS compression coding system and  $N$  is the maximum number of the audio channels determined by the data transfer rate, sampling frequency and quantization bit number of the DVD-Audio disk.

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15.. Claim 13 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 9 of U.S. Patent No. 6,449,227.

Regarding claim 13, claim 9 of the U.S. Patent No. 6,449,227 cite the features of claim 13 of this application including wherein if the audio coding mode is linear pulse modulated (PCM) audio, the first to third quantization bit numbers are respectively 16 bits, 20 bits, and 24 bits, the first to third sampling frequencies are respectively 44.1 KHz, 88.2KHz, and 176 KHz, a maximum number of audio channels is determined by the following equation:

$$N = Mbr / (Fs * Qb),$$

where Fs is the sampling frequency (Hz), Qb is the quantization bit number, Mbr is the maximum data transfer rate (Mbps) of the DVD-Audio disk, and N is the maximum number of the audio channels determined by the data transfer rate, sampling frequency and quantization bit number of the DVD-Audio disk.

16. Claim 14 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 10 of U.S. Patent No. 6,449,227.

Regarding claim 14, claim 10 of the U.S. Patent No. 6,449,227 cite the features of claim 14 of this application including wherein if the audio coding mode is a compression coding system, a maximum number of audio channels is determined by the following equation:

$$N = (Mbr * Ccr) / (Fs * Qb),$$

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where  $F_s$  is the sampling frequency (Hz),  $Q_b$  is the quantization bit number,  $M_{br}$  is the maximum data transfer rate (Mbps) of the DVD-Audio disk,  $C_{cr}$  is a compression ratio according to a DTS compression coding system and  $N$  is the maximum number of the audio channels determined by the data transfer rate, sampling frequency and quantization bit number of the DVD-Audio disk.

17. Claim 17 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 11 of U.S. Patent No. 6,449,227 in view of Kawamura et al (US 6,075,920)

Regarding claim 17, claim 11 of the U.S. Patent No. 6,449,227 cite the features of claim 17 of this application including DVD-Audio, audio titles each having audio title set management table followed by a plurality of contiguous audio objects (AOBs), a plurality of audio stream attributes, each having an audio coding mode, a quantization bit number, a sampling frequency and decoding algorithm information relating to a number of audio channels of the audio data, wherein each of the audio objects includes a plurality of audio packs having portions of the audio data corresponding to the decoding algorithm stored in the audio stream attribute (see lines 3-12

Claim 11 fails to cite the claimed features of claim 17 of this application such as and encoder to encode the audio data. Kawamura et al teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format (see col.7, lines 33-58), comprising audio encoder 6 and

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video encoder 5 which encodes audio and video data as effective DVD-Audio (Fig.1, col.8, line 57 to col.9, line 9), here the Kawamura device functions as DVD-Audio and DVD-Video since both video and audio can be processed in the DVD format. It would have been obvious to add an encoder limitation to claim 11 in order to facilitate encoding data.

18. Claim 18 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 12 of U.S. Patent No. 6,449,227

Regarding claim 18, claim 12 of the U.S. Patent No. 6,449,227 cite the features of claim 18 of this application including DVD-Audio, wherein each of the audio packs comprises a pack header, a packet header, a sub-stream identification value, stuffing frame information, audio frame information, and one of the portions of the audio data (see lines 1-7).

19. Claim 19 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 13 of U.S. Patent No. 6,449,227

Regarding claim 19, claim 13 of the U.S. Patent No. 6,449,227 cite the features of claim 19 of this application including wherein the pack header is 14 bytes, the packet header is 1 byte, the sub-stream identification value is 1 byte, the stuffing frame information is 1 byte, the audio frame information is 3 bytes, and the one of the portions of the audio data is between 1 and 2013 bytes of linear pulse code modulation (PCM) data (see lines 1-7).



20. Claim 20 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 14 of U.S. Patent No. 6,449,227

Regarding claim 20, claim 14 of the U.S. Patent No. 6,449,227 cite the features of claim 20 of this application including wherein each of the audio packs comprises a pack header, a packet header, a sub-stream identification value, stuffing frame information, audio frame information, and one of the portions of the audio data (see lines 1-7).

21. Claim 21 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 15 of U.S. Patent No. 6,449,227

Regarding claim 21, claim 15 of the U.S. Patent No. 6,449,227 cite the features of claim 21 of this application including wherein the pack header is 14 bytes, the packet header is 1 byte, the sub-stream identification value is 1 byte, the stuffing frame information is 1 byte, the audio frame information is 3 bytes, and the one of the portions of the audio data is between 1 and 2013 bytes of Dolby AC-3 data (see lines 1-4)..

22. Claim 22 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 16 of U.S. Patent No. 6,449,227

Regarding claim 22, claim 16 of the U.S. Patent No. 6,449,227 cite the features of claim 22 of this application including wherein each of the audio packs comprises a pack header, a packet header, and one of the portions of the audio data (see lines 1-5).

23. Claim 23 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 17 of U.S. Patent No. 6,449,227

Regarding claim 23, claim 17 of the U.S. Patent No. 6,449,227 cite the features of claim 23 of this application including wherein the pack header is 14 bytes, the packet header is 1 byte and the one of the portions of the audio data is between 1 and 2013 bytes of MPEG data (see lines 1-3)..

24. Claim 24 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 18 of U.S. Patent No. 6,449,227

Regarding claim 24, claim 18 of the U.S. Patent No. 6,449,227 cite the features of claim 24 of this application including wherein each of the audio packs comprises a pack header, a first packet header for a main audio frame, a first one of the portions of the audio data in the main audio frame, a second packet header for an extension audio frame, an a second one of the portions of the audio data in the extension audio frame (see lines 1-9).

25. Claim 25 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 19 of U.S. Patent No. 6,449,227

Regarding claim 25, claim 19 of the U.S. Patent No. 6,449,227 cite the features of claim 25 of this application including wherein each pack header is 14 bytes, the first

packet header is 1 byte, the first portion of the audio data is between 1 and 1152 bytes of MPEG data, the second packet header is 1 byte, and the second portion of the audio data is between 1 and 1584 bytes of MPEG data (see lines 1-6).

26. Claim 26 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 20 of U.S. Patent No. 6,449,227

Regarding claim 26, claim 20 of the U.S. Patent No. 6,449,227 cite the features of claim 26 of this application including wherein each of the audio packs further comprises a padding packet which is increased based upon a number of samples of the audio data.

27. Claim 27 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 21 of U.S. Patent No. 6,449,227

Regarding claim 27, claim 21 of the U.S. Patent No. 6,449,227 cite the features of claim 27 of this application including wherein the sampling frequency is approximately 48 KHz, the quantization bit number is 24 bits, and the number of audio channels is 10, when the audio data is linear pulse code modulated (PCM) data.

28. Claim 28 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 22 of U.S. Patent No. 6,449,227

Regarding claim 28, claim 22 of the U.S. Patent No. 6,449,227 cite the features of claim 28 of this application including wherein a compression rate of the audio data is

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approximately 2:1 for lossless psychoacoustic coding and approximately 4:1 for lossless pseudo psychoacoustic coding.

29. Claim 30 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 23 of U.S. Patent No. 6,449,227 in view of Kawamura et al (US 6,075,920)

Regarding claim 30, claim 23 of the U.S. Patent No. 6,449,227 cite the features of claim 30 of this application including DVD-Audio, VIDEO-TS and AUDIO-TS directories positioned at the data zones, wherein AUDIO-TS includes information on an audio manager (AMG), wherein the data zone includes the audio titles each having information on audio titles each having audio title set information (ATSI) followed by contiguous audio objects (AOBs), the ATSI includes audio stream attributes having an audio coding mode, first, second and third quantization bit corresponding to the audio data, a first, second, third, fourth, fifth and sixth sampling frequency corresponding to the data, and decoding algorithm information related to audio channel number of the audio, and wherein the AOBs includes a plurality of audio packs having the audio data corresponding to the decoding algorithm stored on the audio stream attributes (see lines 1-21).

Claim 23 fails to cite the claimed features of claim 30 of this application such as encoding the data and the information on the data. Kawamura et al teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with

the MPEG standard used in DVD format (see col.7, lines 33-58), comprising audio encoder 6 and video encoder 5 which encodes audio and video data as effective DVD-Audio (Fig.1, col.8, line 57 to col.9, line 9), here the Kawamura device functions as DVD-Audio and DVD-Video since both video and audio can be processed in the DVD format; and reproducing apparatus (Fig.2; col.11, line 64 to col.13, line 67). It would have been obvious to add an encoder and reproducing means limitation to claim 23 in order to facilitate encoding and reproduction of data, wherein the data conforms, at least, to the DVD-Audio format.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize that the method claim 30 of this application can be practiced by the apparatus claim 23 of US Patent No. 6,449,227.

30. Claim 31 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 1 of U.S. Patent No. 6,449,227 in view of Kawamura et al (US 6,075,920)

Regarding claim 31, claim 1 of the U.S. Patent No. 6,449,227 cite the features of claim 31 of this application including DVD-Audio, audio manager (AMG) having information on audio titles each having audio title set information (ATSI) followed by contiguous audio objects (AOBs), directory of audio title set, and recording (storing) of data on DVD (see lines 2-22).

Claim 1 fails to cite the claimed features of claim 31 of this application such as and encoder to encode the data as effective data of a DVD-Audio. Kawamura et al

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teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format (see col.7, lines 33-58), comprising audio encoder 6 and video encoder 5 which encodes audio and video data as effective DVD-Audio (Fig.1, col.8, line 57 to col.9, line 9), here the Kawamura device functions as DVD-Audio and DVD-Video since both video and audio can be processed in the DVD format. It would have been obvious to add an encoder limitation to claim 1 in order to facilitate encoding data wherein the data conforms, at least, to the DVD-Audio format.

Furthermore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to recognize that the method claim 31 of this application can be practiced by the apparatus claim 1 of US Patent No. 6,449,227.

31. Claim 36 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 1&2 of U.S. Patent No. 6,449,227 in view of Kawamura et al (US 6,075,920)

Regarding claim 36, claims 1&2 of the U.S. Patent No. 6,449,227 cite the features of claim 36 of this application including DVD-Audio, audio manager (AMG) having information on audio titles each having audio title set information (ATSI) followed by contiguous audio objects (AOBs), directory of audio title set, including sampling frequencies of 176.4 KHz and 192 KHz (see lines 2-23 of claim 1 and lines 1-8 of claim 2).

Claims 1&2 fail to cite the claimed features of claim 36 of this application such as and encoder to encode the data as effective data of a DVD-Audio. Kawamura et al teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format (see col.7, lines 33-58), comprising audio encoder 6 and video encoder 5 which encodes audio and video data as effective DVD-Audio (Fig.1, col.8, line 57 to col.9, line 9), here the Kawamura device functions as DVD-Audio and DVD-Video since both video and audio can be processed in the DVD format. It would have been obvious to add an encoder limitation to claim 1 in order to facilitate encoding data wherein the data conforms, at least, to the DVD-Audio format.

32. Claim 37 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 2 of U.S. Patent No. 6,449,227.

Regarding claim 37, claim 2 of the U.S. Patent No. 6,449,227 cite the features of claim 37 of this application including wherein the sampling frequencies comprises 48 KHz, 96 KHz, 44.1 KHz, and 88.2 KHz (see lines 1-8).

33. Claim 38 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 2 of U.S. Patent No. 6,449,227.

Regarding claim 38, claim 2 of the U.S. Patent No. 6,449,227 cite the features of claim 38 of this application including wherein the audio coding mode is linear pulse code

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modulated (PCM) audio, and first to third quantization bit numbers are respectively 16 bits, 20 bits and 24 bits (see lines 1-8).

34. Claim 39 is rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claim 3 of U.S. Patent No. 6,449,227.

Regarding claim 39, claim 3 of the U.S. Patent No. 6,449,227 cite the features of claim 38 of this application including wherein the audio coding mode is a compression coding system, and first to third quantization bit numbers are respectively 16 bits, 20 bits and 24 bits (see lines 1-7).

***Claim Rejections - 35 USC § 102***

35. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.

36. Claim 15 is rejected under 35 U.S.C. 102(e) as being anticipated by Kawamura et al (US 6,075,920).

Regarding claim 15, Kawamura et al teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these



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data as well as data produced on a computer in accordance with the MPEG standard, comprising:

a) digital versatile disc (DVD) (see col.20, lines 18-28), here Kawamura discloses that the data recording method and apparatus of the Kawamura invention may be utilized to record/reproduce compressed digital images, compressed digital speech, and so on, in a multiplex manner to create digital video disc (DVD);

b) a video directory and audio directory (see col.19, lines 26-40) here Kawamura discloses that a region in which one or a plurality of audio/video tracks are recorded as user data may be regarded as one file in a file system such that a computer can manage and modify an assignment situation of a region for computer data and programs and a region for recording audio/video data on a data recording medium. Further, in this case, the TOC area may be treated as a virtual directory in the file system, and audio/video data may be treated as files existing in the directory such that the audio/video data can be read from and written into a computer system;

b) an encoding unit to generate the audio data and control information of the audio data (see audio encoder 6, control unit 20; col.8, lines 40-50), here audio control information includes time code as control data; and

c) an optical pickup to record the audio data and the control information in an audio directory (see Fig.1&3; writer unit 18 and recording medium 19 ; col.10, lines 5-11 and col.11, lines 48-51; col.19, lines 26-40 and col.20, lines 18-28).

***Claim Rejections - 35 USC § 103***

37. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

38. Claim 32 is rejected under 35 U.S.C. 103(a) as being unpatentable over Kawamura et al in view of Akune et al (US 5,856,796).

Regarding claim 32, Kawamura et al teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard, comprising recording the data and information on the data in an audio directory of the DVD other than a video directory of the DVD (see col.10, lines 5-11; col.11, lines 48-52; col.19, lines 26-40; and col.20, lines 18-28; and col.8, lines 31-50). Here the time code constitutes information on the data.

Kawamura fails to disclose the method of encoding the audio data at a sampling frequency of one of 176.4 KHz and 192 KHz, and information on the data.

Akune et al teach a sampling rate converting method and apparatus for converting by filtering the sampling frequency of a 1-bit digital data equal to 64 times 44.1 KHz or the sampling frequency of 1-bit digital data equal to 49 times 48 KHz, wherein 96 KHz is a sampling frequency for higher-sampling audio data, while 192 KHz is a sampling frequency for super-digital audio data. It would have been obvious to modify Kawamura by realizing Kawamura with the means to sample audio data at the

high frequency of 192 KHZ, as taught by Akune et al, in order, for example, to satisfy a desired engineering design consideration.

***Allowable Subject Matter***

39. Claims 16,29&33-35 are allowable over the prior art of record.

40. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 16, the invention relates to a digital versatile disk (DVD), and an apparatus and method for recording data on and/or reproducing data from the DVD, including an audio DVD (DVD-Audio) and an apparatus and method for recording data on and/or reproducing data from the same.

The closest references Kawamura et al (US 6,075,920) teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format, and Akune et al (US 5,856,796) teach a sampling rate converting method and apparatus for converting by filtering the sampling frequency of a 1-bit digital data equal to 64 times 44.1 KHz or the sampling frequency of 1-bit digital data equal to 49 times 48 KHz,

However, Kawamura et al and Akune et al fail to explicitly teach an apparatus to record audio data and control information of the audio data on a DVD, where the apparatus comprises wherein the encoding unit samples the audio data at a sampling frequency selectable between 176.4 KHz and 192 KHz, and is able to record the audio

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data on the DVD at the sampling frequency of 176.4 KHz and the sampling frequency of 192 KHz.

Regarding claim 29, the invention relates to a digital versatile disk (DVD), and an apparatus and method for recording data on and/or reproducing data from the DVD, including an audio DVD (DVD-Audio) and an apparatus and method for recording data on and/or reproducing data from the same.

The closest references Kawamura et al (US 6,075,920) teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format, and Akune et al (US 5,856,796) teach a sampling rate converting method and apparatus for converting by filtering the sampling frequency of a 1-bit digital data equal to 64 times 44.1 KHz or the sampling frequency of 1-bit digital data equal to 49 times 48 KHz,

However, Kawamura et al and Akune et al fail to explicitly teach an apparatus for storing audio information on a DVD-Audio disk, where the apparatus comprises an optical pickup to record the audio information in both the video and audio directories of the DVD-Audio disk so that both of the video and audio directories contain only audio information.

Regarding claim 33, the invention relates to a digital versatile disk (DVD), and an apparatus and method for recording data on and/or reproducing data from the DVD,

including an audio DVD (DVD-Audio) and an apparatus and method for recording data on and/or reproducing data from the same.

The closest references Kawamura et al (US 6,075,920) teach method and apparatus for recording and reproducing video data, audio data, caption data composed of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format, and Akune et al (US 5,856,796) teach a sampling rate converting method and apparatus for converting by filtering the sampling frequency of a 1-bit digital data equal to 64 times 44.1 KHz or the sampling frequency of 1-bit digital data equal to 49 times 48 KHz,

However, Kawamura et al and Akune et al fail to explicitly teach a method of recording audio data and information on the audio data on a DVD-Audio disk and a DVD-Video, where the method comprises encoding the data at a sampling frequency of one of 176.4 KHz and 192 KHz and the information on a data if the DVD is a DVD-Audio and encoding the data at a sampling frequency of one of 88.2 KHz and 96 KHz and the information on the data if the DVD is DVD-Video.

Regarding claim 34, the invention relates to a digital versatile disk (DVD), and an apparatus and method for recording data on and/or reproducing data from the DVD, including an audio DVD (DVD-Audio) and an apparatus and method for recording data on and/or reproducing data from the same.

The closest references Kawamura et al (US 6,075,920) teach method and apparatus for recording and reproducing video data, audio data, caption data composed

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of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format, and Akune et al (US 5,856,796) teach a sampling rate converting method and apparatus for converting by filtering the sampling frequency of a 1-bit digital data equal to 64 times 44.1 KHz or the sampling frequency of 1-bit digital data equal to 49 times 48 KHz,

However, Kawamura et al and Akune et al fail to explicitly teach a method of recording data and information on the data on a DVD, where the method comprises dividing the encoded data into data of 96 KHz and data of 192 KHz, and recording the data of 192 KHz as audio titles in an AUDIO\_TS directory of the DVD and recording the data of 96 KHz as video titles in a VIDEO\_TS directory.

41. Claims 40-43 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

42. The following is a statement of reasons for the indication of allowable subject matter:

Regarding claim 40, the invention relates to a digital versatile disk (DVD), and an apparatus and method for recording data on and/or reproducing data from the DVD, including an audio DVD (DVD-Audio) and an apparatus and method for recording data on and/or reproducing data from the same.

The closest references Kawamura et al (US 6,075,920) teach method and apparatus for recording and reproducing video data, audio data, caption data composed

of a plurality of these data as well as data produced on a computer in accordance with the MPEG standard used in DVD format, and Akune et al (US 5,856,796) teach a sampling rate converting method and apparatus for converting by filtering the sampling frequency of a 1-bit digital data equal to 64 times 44.1 KHz or the sampling frequency of 1-bit digital data equal to 49 times 48 KHz,

However, Kawamura et al and Akune et al fail to explicitly teach the apparatus, where the apparatus comprises wherein the ATSI further comprises value fields, the sampling frequencies comprise first to sixth sampling frequencies including the 176.4 KHz and 192 KHz sampling frequencies, and the ATSI indicates the first to sixth sampling frequencies by corresponding states of two of the value fields.

**43. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

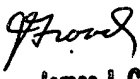
**Conclusion**

44. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Christopher O. Onuaku whose telephone number is (703) 308-7555. The examiner can normally be reached on M-F 8:30-6:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's Acting supervisor, Thai Tran can be reached on 703-305-4725. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

COO  
5/20/05

  
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